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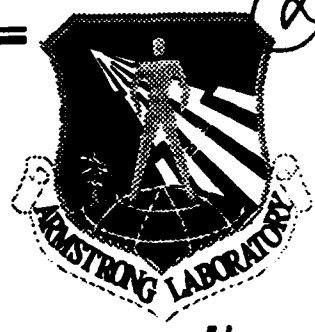

ARMSTRONG LABORATORY

INTEGRATING THE AFFECTIVE DOMAIN INTO THE INSTRUCTIONAL DESIGN PROCESS

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This study develops a model of instructional design that incorporates the affective domain as an integral component. The model combines Keller's ARCS model of motivation for learning with the five phased military instructional design model. The proposed model provides a framework for organizing instructional principles, strategies and techniques concerning the affective domain and furnishes a theoretical base to aid in formulating research hypotheses and collecting empirical data. Attention to the affective domain is particularly important for technology based instruction that removes teacher/student interaction from the lesson delivery. This model should be helpful because it provides for the systematic consideration of the affective domain in every aspect of the instructional design process. The study concludes with recommendations for additional research needed to operationalize the model for use by instructional designers.

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TABLE OF CONTENTS

LIST OF FIGURES

PREFACE

This study develops an integrated model of instructional design that incorporates the affective domain as an essential part. The model provides a framework for organizing instructional principles, strategies and techniques concerning the affective domain. It also provides a theoretical base to aid in forming research hypotheses and collecting experimental data. This model ensures that the affective domain is considered in every aspect of the instructional design process. The study concludes with recommendations for further research needed to complete the model.

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SUMMARY

Instructional design models have focused almost exclusively on the cognitive domain. Research in strategies, tools and techniques for instructional developers related to student interest and motivation to learn has been ignored. Attention to the affective domain is particularly important for technology based instruction that removes the teacher/student interaction from the lesson delivery. This study develops an integrated model of instructional design that includes the affective domain as an essential part. The model combines Keller's ARCS model of motivation for learning with the five phased military instructional systems design (ISD) model. The proposed model offers a framework for organizing instructional principles, strategies and techniques concerning the affective domain. The model also furnishes a theoretical base to aid in form research hypotheses and collecting scientific data. The study recommends elaborations and additional research needed to make the model a practical tool for use by instructional designer/developers.

INTEGRATING THE AFFECTIVE DOMAIN INTO THE INSTRUCTIONAL DESIGN PROCESS

I. INTRODUCTION

"Historically, it is well known that more workers are discharged because of behavioral problems than because of their inability to perform job tasks" (Daggett and Marrazo, 1983). In discussing the effects of government regulations on productivity and competitiveness, the president of General Motors told Congress that regulations didn't bother him as much as worker productivity. What he really needed was help in motivating his workers to be productive--even to show up for work (Walgren, 1991). A recent Defense Information School study showed that three out of four failures in basic broadcasting and military journalist courses were due to a lack of interest or enthusiasm rather than inability to master the subject matter.

It follows then that teaching in the affective domain is at least as important as instruction in the cognitive and psychomotor domains. Yet, instructional design models and practices have focused primarily on the acquisition of knowledge and psychomotor skills. Concern for the affective component has been limited to such aspects as "user friendliness" of the computer based instruction or ways to overcome computer phobia among teachers and students.

The purpose of this research is to investigate how the affective domain can be addressed systematically in the instructional design process. The goal is to produce an integrated model of instructional design that includes the affective domain as an essential part. The model must include sufficient rationale and elaborations to serve as a framework for organizing instructional principles, strategies and techniques concerning the affective domain. It must also provide a theoretical base for form research hypotheses and collecting data.

II. DISCUSSION OF THE PROBLEM

Defining the Affective Domain.

The division of learning objectives into separate domains has been largely accepted by educators since the landmark effort by Bloom and his group (1956). Bloom's group established three categories of educational objectives, which they called affective, cognitive, and psychomotor. The cognitive (thinking) and psychomotor (physical) domains are fairly well bounded in theory and research. The affective domain has been much more difficult to pin down. It is usually considered to encompass

human behaviors associated with emotion and feelings, but these are very fuzzy areas. Ringness (1975) says the domain is so difficult to define because it is both ambiguous and controversial.

The literature of the affective domain in instruction spans the gamut. At one extreme are those who feel it is subsumed into the cognitive domain and that achievement of cognitive and/or psychomotor objectives generates affective behavior. At the other extreme are those who believe that what you imagine, what you believe in, you can do. The latter group believe that developing one's own positive mind set is the most important factor for success.

Martin and Briggs (1986) claim the domain is so broad and unfocused that all behaviors not clearly cognitive or psychomotor are simply lumped together as affective. They cite self-concept, motivation, interests, attitudes, beliefs, values, self-esteem, morality, ego development, feelings, need achievement, locus of control, curiosity, creativity, independence, mental health, personal growth, group dynamics, mental imagery, and personality as being associated with the affective domain in the literature. They contend "...that the lack of definition and focus has made measurement and research in the domain difficult; and it has made translation of affective behaviors into classroom practices inadequate" (p. 13). Bills (1976) states: "We are not close to an agreement about what affect is or what to call it....I have concluded that unless we can achieve a better concept of affect, we will never be able to deal with it in our classrooms or in our research" (p. 10).

Bloom (1956) describes learning objectives in the affective domain as those involved in interest, attitudes and values. Krathwohl (1964) says affective objectives are those which emphasize a "feeling tone, an emotion, or a degree of acceptance or rejection" (p. 7). Mager (1984a) defines attitude as a tendency to behave in one way or another. Ever the behaviorist, he says positive attitudes are determined by approach behaviors and negative attitudes by avoidance behaviors.

Gagne (1988a) refers to attitudes as a class of learned capabilities that predispose an individual to have a positive or negative reaction. Gephart and Ingle (1976) separate the affective domain into physiological (perspiration, heart rate, respiration, and visceral responses) and psycho-social behaviors and responses (attitudes, beliefs, values, emotions, and perceptions). Gagne (1985) discusses motivation as a condition of learning and provides three ways of harnessing motivations to accomplish educational goals. These are incentive motivation, task motivation and achievement motivation. Keller (1983) defines motivation as the direction and magnitude of behavior.

Snow (1989) talks of goals, motives and values as broadly defining the affective domain. Krathwohl (1964) offers a classification system that sets a continuum for affective behaviors based upon the degree to which an attitude, value or interest is incorporated into the learner's personality. His categories go from receiving (merely being aware) through responding, valuing, organization and characterization (a value complex becoming a basic outlook on life). Anderson (1981) cited seven central student affective characteristics:

1) values,
2) academic self-esteem,
3) anxiety,
4) interests,
5) locus of control,
6) attitudes, and
7) preferences.

Sinclair (1985) refers to "affect" as describing the feeling or emotional aspect of experience. He says it is concerned with:

-The motivation of behavior
-The maintenance and enhancement of self-esteem
-Anxiety and achievement motivation
-Development of curiosity, exploratory behavior, and a need-to-know and understand
-Social motives, such as a need for praise, recognition and attention

Romiszowski (1989) distinguishes between attitude and affect. He views skilled behavior as covering four domains: Cognitive (thinking), psychomotor (physical), interactive (interpersonal), and reactive (the skills component of the affective domain). The reactive domain deals with personal control and conditioned habits. For instruction, it would include listening habits, study skills and development of a "mental set" or value system for learning. The interactive domain includes social habits such as good manners and interpersonal control skills such as leadership, salesmanship and supervision.

Romiszowski further suggests that the skills involved in the reactive and interactive domains are as amenable to the general principles of instruction as are cognitive and psychomotor skills. He also sees a parallel between the automation of affective domain skills (reflexive, conditioned activity versus behavior resulting from a planned strategy of action for a specific situation) and the automation of cognitive and psychomotor behaviors.

The most comprehensive attempt to provide a taxonomy of the affective domain was made by Martin and Briggs (1985). They

present 132 conditions related to the affective domain, ranging from morals and ethics to self-development and group dynamics. They believe the most important for training, however, to be attitudes and values.

For this paper, the affective domain is characterized in terms of motivation as it affects the direction and intensity of behavior. This is not meant to be restrictive of the factors involved in establishing motivation. Rather it is a convenience for studying the many factors and how they are used to address the affective domain in instructional design. This definition reflects Gagne's concept of attitudes and Keller's concept of motivation in developing instructional plans and activities to influence the learner to achieve a desired performance. It does not prevent the consideration of aptitude (Snow, 1989) and trait (Kyllonen and Shute, 1989) interactions as determinants of learner performance. However, they would be considered only in their contribution to motivating the learner behavior.

Importance of the Affective Domain to Learning.

Gagne states, "It is a truism that in order for learning to occur, one must have a motivated individual" (1988a, p. 25). He recognizes the importance of the affective domain to the instructional design process. "...[P]lanning for the activation of an appropriate motivational state must be an early step in instructional planning. Motivation must be activated (or at least have an identified occurrence) before learning begins and during the time it is taking place. Even the events after learning...have a significant effect on motivation for subsequent occasions of learning" (p. 64). Schunk (1991) is also emphatic about the importance of the affective domain in instruction.

> Although one can learn without being motivated, motivation plays an important role in learning. Students who are motivated to learn attend to instruction and engage in such activities as rehearsing information, relating it to previously acquired knowledge and asking questions. Rather than quit when they encounter difficult material, motivated students expend greater effort to learn. They choose to work on tasks when they are not required to do so; in their spare time they read books on topics of interest, solve problems and puzzles, and work on special projects. In short, motivation leads students to engage in activities facilitating learning (p. 229).

Kozma (1991) and Salomon (1979) present learning as an active, constructive process. The learner manages information resources to create new knowledge by taking outside information and integrating it with information already in memory. The

learner has major responsibility in the instructional process. If the model is accurate, then the importance of motivating the student to be a willing and eager participant is paramount--indeed axiomatic. "Motivation initiates, maintains, and controls the extent and direction of behavior" (Ringness, 1975).

Neglect of the Affective Domain.

According to Keller (1979) motivation is the neglected "heart" of our understanding of how to design instruction. "Historically, instructional science has benefitted from the work of behavioral psychology and cognitive-learning psychology, but this has given us only partial knowledge of how people learn, and almost no knowledge of why they learn" (p. 390). According to Beane (1985/86) "...the form or substance of affective education represents perhaps the most problematic of all school issues" (p. 27).

Even a brief review of the literature reveals greater emphasis on the cognitive domain in instructional research than is devoted to the affective domain. Such neglect has not always been the case. Krathwohl (1964) studied the history of major courses in general education (liberal studies) at the college level. He found that, "...in the original statement of objectives there was frequently as much emphasis given to affective objectives as to cognitive objectives. However, as we followed some of these courses over a period of ten to twenty years, we found a rather rapid dropping of the affective objectives from the statements about the course and an almost complete disappearance of efforts at appraisal of student growth in this domain" (p. 16).

Snow (1989) suggests cognitive psychology has hardly considered the cognitive-motivation interface at all. He recommends research on problem-solving, cognition-motivation interaction be increased.

Although designers and developers have often ignored the affective domain in instructional design models, the practice of affective instruction has been kept alive by classroom teachers. It is usually mastery of affective techniques that set apart the master teacher from the mediocre. The ability to capture the student's attention and structure the presentation to engage the student with the subject matter is an art form. Good teachers control the learning environment using their experience tested techniques and the technology available to maintain interest and motivate the learner.

Laminack and Long's (1985) study of teacher effectiveness supports accounts of the importance to student achievement of attention to the affective domain. They found that

undergraduates' memories of their favorite elementary teacher are characterized by a variety of affective\ factors. In general, however, scientific evidence supporting the affective domain as either dependent or independent variables is sparse.

Why has so little effort has been placed in exploring the affective component of the learning process if it is so widely recognized as a major factor in learning? Krathwohl (1964) suggested that the erosion of affective objectives in college curricula could be due to the hesitancy of teachers to assign student grades for interest, attitude, or character development. Of course extreme behaviors are recognized and disciplined, and at the other extreme, awards and honors presented. Usually, however, imposing discipline and recognizing honors are treated as administrative functions and performed outside the classroom except in the primary grades. Krathwohl believed the hesitation to use affective measures for assigning grades was mostly due to two factors. First, appraisal techniques are inadequate. Second, students easily exploit their ability to detect responses to be rewarded or penalized.

Krathwohl felt cognitive performance could be measured more objectively than affective behavior. It was fairly straightforward to determine competence in meeting cognitive objectives. In contrast, we might not trust the professed evidence of an interest or attitude because of the difficulty in determining whether a response was sincere.

A more serious reason advanced by Krathwohl for dropping affective objectives from the curriculum is the philosophical basis of personal privacy, cultural diversity and individualism. Free choice and individual decision are central in a democratic society. The imposition of affective behaviors blurs the distinction between education and indoctrination.

Another reason identified by Krathwohl for the erosion in affective objectives in education has to do with the immediacy of results. Particular items of information or a specific skill is learned relatively quickly and results of instruction are readily seen. In contrast, affective objectives dealing with values and attitudes may be achieved only over considerable time, perhaps even years before they can be appraised. Topics such as honesty, organizational loyalty or drug abuse prevention are difficult to assess from immediate performance measurements.

Martin and Briggs (1986) searched the literature for clues as to why the affective domain has not been addressed more vigorously in instructional design theory and practice. In addition to difficulty of definition and measurement, they identified six other problems they feel have contributed to this neglect.

-The belief that affective goals are so long range and intangible that the time restrictions of instructional programs prevent development and measurement of affective results.

-A fear that discussion of values, attitudes, morals, and other aspects of the domain may be seen as indoctrination or brainwashing.

-A recognition that the absence of behaviors may often be as important in the affective domain as the presence of behaviors.

-The inability to identify and specify affective behaviors because of the imprecision of natural language.

-An uneasiness about some of the persuasive communication methods associated with attitude change.

-Disagreement and confusion about whether affective behaviors are ends (outcomes) or means to ends.

The rationale presented by Krathwohl and others for the decline of affective objectives in education seem reasonable. Their effects are probably still operant today. Still unexplained, however, is the neglect the affective domain has suffered in instructional design theory for military and industry training. Here, technology itself may have been a contributing factor.

Computer based training (CBT) has been the leading edge for instructional technology for almost three decades. It is an expensive technology and education and training administrators are sold on innovation by cost/benefit analysis. So, the pressure for research has been to determine how much and how fast knowledge and skills could be gained using CBT. Besides there is something Orwellian about having a computer teaching attitudes and values--especially in the public schools. Not surprisingly, the achievement of cognitive objectives by new technology delivery methods is usually compared with traditional instructional methods (Stephenson, 1990). Keller (1983) reinforces this notion when he states, "... we often read that the goal of instructional technology is to design effective and efficient instruction. Unfortunately, these criteria make it easy to exclude a specific concern for motivation, or the appeal of instruction" (p. 388).

Experience with the school system tells us that most small children are eager and excited about going to school. As they grow older,however, they are likely to have negative feelings about school and school tasks (Ringness, 1975). Krathwohl, Mager, Keller and others have pointed out that this curiosity, interest and motivation to learn seems to be destroyed at least for many of the students by the very procedures of instruction used in the classroom (Romiszowski, 1989). This change in attitude cannot be attributed entirely to the schools, but it does highlight a condition that needs to be addressed.

III. RESULTS

The Integrated Instructional Design Model.

Affective domain instruction can be divided into two areas. One of these deals with instruction where the subject matter itself is principally concerned with changing student values, beliefs and attitudes. Courses in race relations, ethics and drug abuse prevention fall into this group. Military classes in the history and tradition of the service, primarily concerned with generating loyalty and pride in belonging to an organization dedicated to the service of the nation and defense of freedom, are another example.

The second area of affective domain instruction addresses how the learner feels about the subject being learned. The goal is simply to motivate the learner to want to master the knowledge and skills being taught. In the design and delivery of innstruction, we need to spend as much effort in motivating the student to learn as we do with the cognitive and psychomotor needs. Perhaps we should spend more effort since it has such a powerful impact on achievement.

It is clear from the literature that the affective domain is an important area in education and training--both in achieving affective behaviors and in facilitating cognitive and psychomotor objectives. The development of clearly defined instructional activities and strategies for the affective domain has lagged those of the psychomotor and, particularly, the cognitive domains. Current ISD models have been developed principally for use in developing instruction for cognitive objectives.

To correct this problem and insure that affective domain objectives are addressed in every lesson, the affective component of instruction must be embedded within the ISD model. This paper presents an instructional design model that integrates the work of Keller in motivating the learner with the five phase military ISD model. The model will make sure the affective domain is considered in a systematic way from curriculum planning and design through lesson development, delivery and evaluation of learning results.

The A R C S Model.

Keller (1983) has developed a general model integrating the various sources of motivation for learning. He calls it the ARCS model; an acronym for the four sets of conditions that must be met to have a motivated learner:

A for attention,
R for relevance,
C for confidence, and
S for satisfaction.

Attention involves grabbing the learner's interest at the beginning of instruction and maintaining that interest throughout the lesson and course. Attention sustaining events arouse the learner's curiosity. Relevance is the personal significance and value to the learner of mastering the learning objectives. The most straightforward tactic, according to Keller, is to inform the learner of the importance of the learning outcome to some desired state or goal. For example, completing a technical course will provide eligibility for a promotion. The point is that the goal is desirable from the learner's perspective--not the lesson developer's. Confidence relates to the learner's expectancy of success. Keller maintains that personal expectancy for success is influenced by experience (success or failure at the task) and locus of control and personal causation (personal control and competence). Difficulty of tasks is also a factor. Success at simple tasks may not generate confidence. Satisfaction comes from achieving performance goals. The gratification of goal achievement is confounded by whether the evaluation of learning outcomes are externally based or made by the learner. Keller speculates that because heavy doses of performance evaluation characterize instructional design, it is not difficult to see that as part of the reason for the erosion of the intrinsic interest of children in the school process.

Keller distinguishes between effort and performance as factors in motivation. He sees effort as the primary dependent variable of motivation. Performance is influenced by ability (individual characteristics) and opportunity (learning design and management) and only indirectly related to motivation. He further distinguishes between performance and consequences. Consequences include affective responses, social rewards and material objects. Consequences combine with cognitive evaluation to influence changes in personal values or motives. Affective behavior is considered to be a function of both person and environmental factors.

The Military Instructional Design Model.

The ISD model used for this paper is a modification of the five phased model used by the military (NAVEDTRA 110A, 1981). The military model is based on the foundations of learning principles and standard system theory (Tennyson, 1989). There has been a movement in instructional theories over the past two decades from the behavioral paradigm to cognitive science (Merrill, 1990). This interest in organization of information

(knowledge base), information acquisition (pedagogy base), and knowledge representation is influenced by developments in artificial intelligence and expert systems architectures.

The military ISD model is divided into five phases. The name of each phase describes the activities involved. The ANALYSIS phase has two major tasks--analyzing the performance problem and assessing the instructional need. The product of the ANALYSIS phase is a needs assessment document that answers five basic questions about the need for instruction:

-Why is the instruction needed?
-Who is it that needs the instruction?
-What is it they need to know or do or feel?
-Where will the instruction take place?
-When is the instruction to be conducted?

The DESIGN phase is where the "how" of the instruction is answered. Here, a task analysis is performed and the instructional objectives developed. Admission requirements and the criteria specifying the competency level required of the learner are prescribed. Instructional strategies are selected and the instructional mode and method determined. Existing learning materials may be identified and reviewed for use in the lesson.

In the DEVELOPMENT phase, the lesson plans are developed and the lessons are prepared. Learning activities are sequenced and scheduled. Learning materials are selected or new ones produced (workbooks, videos, computer programs). Exams are prepared and the completed lessons pilot tested.

The IMPLEMENTATION phase is the administration of the training to the students. It involves both teaching and management of the instructional process. Learner progress is assessed and learning activities adjusted as needed.

The CONTROL phase involves summative evaluation of the lesson and feedback for maintenance and improvement of the instruction.

<u>The Integrated Affective Domain/ISD Model</u>.

A conception of how Keller's A R C S model can be integrated with a modified version of the military ISD model to create a matrix of the design process is shown in Figure 1.

INSTRUCTIONAL DESIGN PHASES

Affective Domain	Analysis	Design	Develop-ment	Implemen-tation	Evalua-tion
Attention					
Relevance					
Confidence					
Satisfaction					
	Validation/Feedback				

Figure 1. ISD Model Integrating Affective Domain

Across the top of the model are the five phases of the military ISD model: Analysis, Design, Development, Implementation, and Evaluation (or "control" in the military model). Down the left side of the figure are the four categories defined by Keller as components of motivation: Attention, Relevance, Confidence, and Satisfaction. Along the bottom of the model is a rectangular cell labelled Validation/Feedback. This cell depicts the formative evaluation which occurs throughout the instructional design process. This confirms that the tasks in each phase have been completed and reviewed. The arrows show the two-way flow of information between phases that provide feedback for improving and maintaining the system. It also shows the process is on-going and not necessarily linear. Kemp (1985), for example, has developed an instructional design model that is circular to show that instructional development is a dynamic process. Evaluation data provides input for improving the instruction for the next class.

Following are a list of the tasks to be performed in each phase. These tasks apply for cognitive, psychomotor and affective domains.

Analysis Phase

1. Determine why the instruction is needed (establish the purpose and goals of the instruction).
2. Describe who needs the instruction (determine learner characteristics and attributes).
3. Establish the content of the instruction (determine the knowledge domain).
4. Determine where and when the instruction will take place (establish the location and schedule for the instruction).

Product: Needs assessment documentation.

Design Phase

1. Specify performance objectives (behavior desired, standard and conditions of performance described).
2. Establish how performance will be measured (evaluation criteria).
3. Determine instructional strategies to be used.
4. Sequence learning activities.
5. Design the delivery system.
6. Select presentation media.

Product: The instructional system design blueprint.

Development Phase

1. Produce or select learning materials (text, work books, graphics, visuals, training aids).
2. Develop delivery system hardware.
3. Generate software for system operation.
4. Create courseware.
5. Test and validate instructor/student/system interaction (interface).

Product: The instructional lesson and delivery system.

Implementation

1. Enroll students (insure students meet selection criteria).
2. Schedule instruction (assign classroom and structure learning activities).
3. Deliver instruction to the student.
4. Maintain the learning environment (insure facilities, learning materials, instructional equipment are available and operating and classroom decorum is maintained).
5. Monitor instructional progress (diagnose learning problems and schedule alternative presentation or remediation).

   Product: Desired student performance behavior.

Evaluation

1. Measure achievement in performing learning objectives.
2. Evaluate instructor performance.
3. Assess the instructional system performance (course materials, mode and methods of instruction, and hardware software operation).

Product: Certification of student achievement and a system evaluation report.

Validation/feedback

1. Conduct formative evaluation of the instructional design process.
2. Validate performance measures through external criteria and follow-up evaluations of related job performance.
3. Provide feedback for system maintenance and improvement.

Product: Feedback for system maintenance and improvement

The A R C S model provides a framework for affective considerations in each of the five phases. Attention in the ANALYSIS phase includes determining both the learners' interest in the subject matter and the instructional needs to arouse the students' curiosity. Factors involved include why the student is enrolled in the course (is it prescribed or voluntary), the nature of the subject matter (does it have inherent interest) and knowledge of generic interests for the student demographic profile.

Relevance includes analyzing the relationship between instruction and the personal and professional goals of the learner, then deciding how to emphasize this relationship.

Confidence involves analyzing the learners' experience in similar learning situations and how to raise the students' expectancy of success. Expectancy varies between individuals, but the belief that it can be taught provides much of the basis for the long standing Dale Carnegie success workshops, EST training and other self-improvement programs.

Satisfaction requires the analyzing the learners' needs for achievement and whether those needs are better served by extrinsic or intrinsic rewards. The students' locus of control orientation is important in determining the need for evaluation during instruction.

The DESIGN phase has two main tasks. First is to generate performance objectives that meet the affective needs identified during the needs analysis phase. The second task is to select the strategies, learning activities and media that will insure the learner meets those objectives.

Even when the student has no choice in attending the instruction, attention gaining strategies and activities must be included early in the instruction. Further, they must be included throughout the curriculum to refresh the students' interest.

Strategies and activities to meet relevant instructional objectives should also be considered early in the course and reinforced throughout the instruction. Instructional content relating success in the classroom to personal and professional goals may range well beyond the subject matter needed for achieving cognitive and psychomotor objectives.

Confidence performance objectives relating to expectations of success may be best served by concentrating on the students' past successes. Having students identify selection for the course (if it is competitive or has entrance requirements) may encourage self-assurance. Determination is sometimes strengthened by emphasizing the difficulty of the course. This can impart a sense of elitism in performance.

Satisfaction is derived primarily from achievement, but it is often thought more motivating if success is determined by self-evaluation than by external assessment. Rewards inherent to the learning task have been found to be less satisfying than those not directly tied to a specific performance criteria.

The difficulty in selecting affective domain instructional strategies, activities and media is that so many confounding and interacting variables exist that rules and principles are almost impossible to generalize and must be burdened with situational qualifiers. Variations in learner characteristics and traits compound the selection algorithm even more. That is why a carefully conducted analysis and needs assessment is so critical for proper affective domain instructional design.

Compared to the ANALYSIS and DESIGN phases, the DEVELOPMENT phase is relatively straight forward. The biggest problems are usually related to costs. Compromises between the most desirable method or mode of instructional delivery and the budget are often required.

Attention of the learner is gained through a variety of techniques used in the media arts. Interest is generated by visuals, auditory messages, motion and color. Animation, sound effects, signals, layout and literary devices such as dramatizations and story telling can help maintain student involvement in the lesson.

Relevance can be addressed in the lesson by using testimonials, illustrative stories and simulations or exercises with actual equipment. The more realistic the instruction, the

easier it is for the student to relate classroom activities to application. Generalizing specific skills and knowledge to applications beyond the immediate task in time and location is also helpful.

Expectations for success can be increased by modeling successful behavior. Anecdotes of people who have overcome fears, obstacles and handicaps can also help. Confidence may be built up by a series of increasingly difficult challenges that can be met successfully. The technique, as with many dealing with the affective domain, requires a fine touch. If the exercises are too easy expectations may be lowered and if they are too difficult the learner may fail. Help or second trials may be offered, but care must be taken not to promote unwanted dependency behaviors.

Rewards may be built into the lesson that address learner gratifications. Satisfaction may also be generated by competition, peer recognition and self-evaluation methods. Maslow's needs hierarchy may help guide lesson development in this aspect of affective objectives (1954).

IMPLEMENTATION is the phase in which the affective domain has been traditionally addressed--not by the designer, but by the instructor. Techniques for gaining attention, maintaining classroom decorum and sparking student enthusiasm are affective objectives that are routinely practiced by even the most inexperienced teacher. They are rarely addressed, however, by instructional designers or developers. As more and more instruction is delivered through a mediated process administered (and sometimes controlled) by computers, the need to consider the affective domain in instructional design increases. Good instructors can overcome poorly designed curricula and instructional materials. Even the most sophisticated computer system, however, cannot unless the affective objectives have been included in the lesson design. Individual characteristics, aptitudes and traits can best be considered during delivery thru personal interactions between the instructor and student. At the same time, the presentation can be revised to achieve affective objectives. If that behavior is to be included in automated instruction, student performance must be monitored and compared with some standard for behavior during the learning process.

The EVALUATION phase requires much attention to the affective objectives. The difficulty of measuring affective goals is cited in the literature as one of the major reasons for neglecting the affective domain in instructional design models. One problem is the relatively short duration for most instruction and the relatively long period required for building complex affective behaviors.

Some affective domain goals may be very difficult to achieve. Development of a value system may require instruction over a long period. It may require inclusion in lessons throughout a program in a variety of message formats--much like an advertising or public relations campaign. Even lower level affective objectives such as learner attention will need periodic reinforcement. On the other hand, once a value system has been learned, it is very persistent. It tends to become self-reinforcing as individuals attend more closely to information supporting an existing belief system and avoid or discredit information contrary to their values. For example, the Marine Corps exerts a carefully orchestrated campaign to instill the concept semper fidelis as an affective behavior. However, once adopted, it remains a behavior often for life. Hence the expression, "Once a Marine, always a Marine."

Research is needed, but I am firmly convinced measures can be adopted that are sufficient to determine if affective learning objectives are met. Certainly attitudes toward the subject domain, the instructional process and eagerness to use the new knowledge and skills can be assessed. Attention measures can include interest shown in continuing to learn about the subject after course the is completed. Relevance can be assessed by asking how the learner thinks she/he would be able to use the new knowledge and skills in their job and beyond. Self-evaluation of competence in solving problems and performing tasks within the subject domain without help will indicate the Confidence level attained. Satisfaction can be deduced from the successful completion of the course and verified by a questionnaire. The most effective measure of the achievement of affective goals is a follow-up questionnaire of the student and his/her supervisor at least six months after course completion. The same is usually true for cognitive domain goals.

IV. CONCLUSIONS

This paper is an attempt to provide a first step in addressing affective components within the instructional design process. To become a useful tool for instructional designers and lesson developers, the model must be fleshed out with task lists and taxonomies of strategies for each cell.

Theories of instruction and models of instructional design focus on the cognitive and psychomotor domains. The affective domain is recognized by most in the literature, but in practice is largely ignored as an area of scientific research in the instructional technology field. A look at military manuals on instructional design and development shows just how little attention is given to affective objectives. The Office of Naval Education and Training published a summary of research findings with implications for Navy instruction and learning (What Works,

1988). There were 60 pages of practical tips on instructional practices found to be effective in schooling. The book "...represents a synthesis of the best available information about instruction available from decades of research studies and teaching experience" (preface). There is only one page devoted to motivating students to learn.

The Air Force Handbook for Designers of Instructional Systems (1978) mentions the affective domain only twice, and that is in the overview section. It defines ISD as "a deliberate and orderly process for planning and developing instructional programs which ensure that personnel are taught the knowledge, skills, and attitudes essential for successful job performance" (p. 1-3). The manual states that the analysis phase of the ISD process results in a statement of all human activities (skills, knowledge, and attitudes) required for successful performance. No further references are made to attitudes, motivation or other aspects of the affective domain in applying the model to Air Force lesson development.

How should we approach the task? First, we need to recognize there are two distinct classes of affective domain requirements in instructional design. One is the design and development of curriculum whose primary goal is to change behavior in the affective domain. Examples are ethics and race relations. The other class is the design and development of lessons that include activities that motivate the student to gain the knowledge and skills needed to accomplish a task or solve a problem. In this case the affective component supports the cognitive and psychomotor objectives.

Much has been written about the changing role of teachers in computer based instruction. They are to become more managers of instruction than presenters of instruction. In addition, the instructor/student ratio increases in the computer based training environment (Kearsley, 1983). As that occurs, the role shifts more and more to manager/technician as the principal duties become keeping the technology on line and managing the instructional environment. The affective domain receives less and less attention unless the art of teaching is incorporated into the CBT lessons.

The way to insure the affective domain is given consideration and treated systematically in all instructional environments is to embed it within the ISD model. Bear (1984) in a discussion of microcomputers in schools concluded that "... future research will find CAI (computer assisted instruction) to be effective in those classrooms that are characterized by the same elements of instruction that previously research has shown to be associated with effective teachers" (p. 12). It seems important, therefore, to research the pedagogy of traditional

instruction to determine the affective domain principles. Then, those principles can be included in CBT system design and lesson development.

The lack of mention of the affective domain in current ISD models does not mean that developers do not include affective considerations in their lessons. It is well established in the literature that the affective-cognitive-psychomotor classification is an arbitrary abstraction of human learning and behavior (Krathwohl, 1964). The division among the domains was created by psychologists and educators to stress that there are differences between educational goals and learning behaviors. The classes are neither natural nor discreet and can only be separated in an artificially contrived classification scheme.

It is simply not possible to design either cognitive or psychomotor instruction without including some affective component. The very act of establishing an instructional goal implies some value to the person, organization or society in its achievement. The selection of content for the lesson requires judgment of the importance or worth of the knowledge and skills to be taught. Hence, the current debate raging in higher education (and spilling over into the public discourse) over the emphasis on Western culture in the general education curriculum. Similarly, it is impossible to teach a motor skill such as swimming, playing the piano or shooting a basketball without some emphasis on the value of gaining dexterity. The motivation to learn may already exist in the student (it may even be a prerequisite) before instruction, or it may need to be generated or enhanced by the instructional program.

It is precisely because the affective is so entwined with cognitive and psychomotor learning achievements that it needs careful attention during the design and development of instruction. That is why this model should be helpful. It provides for the <u>systematic</u> consideration of affective objectives in every aspect of the instructional design process.

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